



USER MANUAL

BLM Series

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1. General description

BLM series scales are destined for identical pieces counting and can be used in store houses control of production and in similar tasks.

Counting pieces function is based on calculation individual mass of detail from sample weight or keyboard inscribed. Scale avails a “learn algorithm” during calculation and this algorithm is correcting inaccuracy conversion.

Scale owns summing register. This register allows to addition or subtraction of next result and observation current state of this register.

Scales grant claims of regulations about safeties in European Union, sign inform about that on brand table CE.

This type of scale not requires legalization.

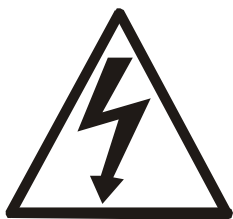
PKWiU classification: : 33.20.31.

2. Completeness

Standard set consist of:

1. Scale
2. Carrying pan
3. Fish-plate pan
4. Feeder
5. User manual
6. Guarantee card

3. Security rules



To avoid electrical shock or damage of the scale or connected peripheral devices, it is necessary to follow the security rules below.

- All repairs and necessary regulations can be made by authorised personnel only.
- To avoid fire risk use a feeder of an appropriate type (supplied with the scale). Pay attention that supply voltage is compatible with specified technical data.
- Do not use the scale when its cover is opened.
- Do not use the scale in explosive conditions.
- Do not use the scale in high humidity.
- If the scale seems not to operate properly, unplug it from the mains and do not use until checked by authorised service.



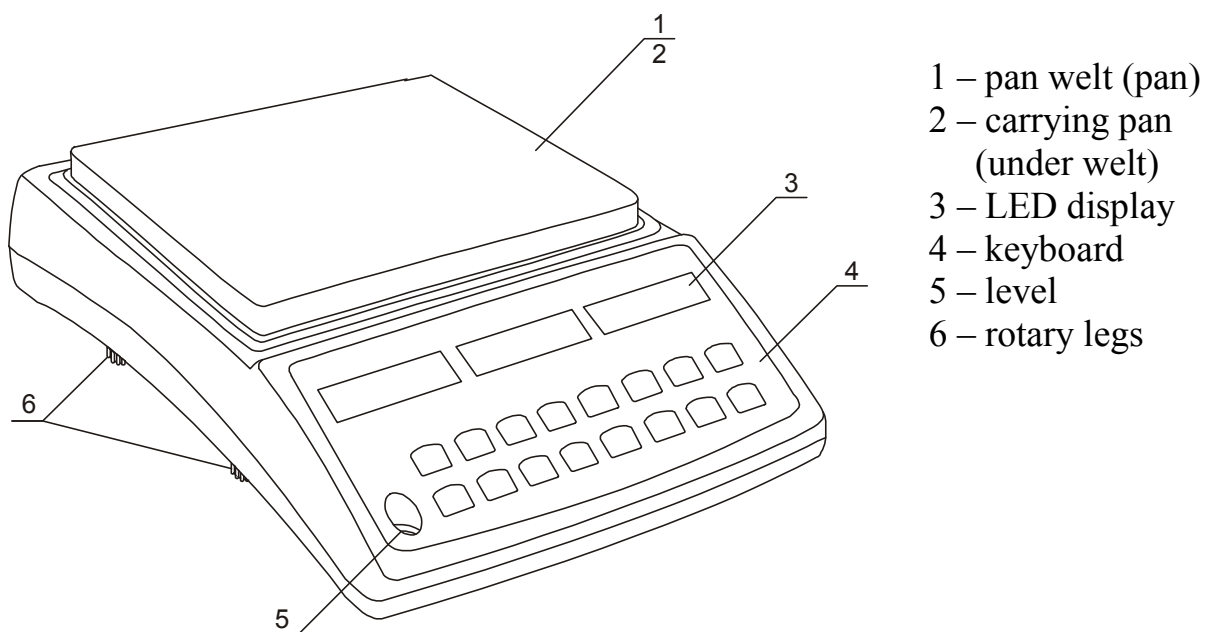
According to legal regulations it is forbidden to dispose wasted electronic equipment in waste containers.

- Please return wasted scale to the point of purchase or other company specialised in recycling of wasted electronic components.

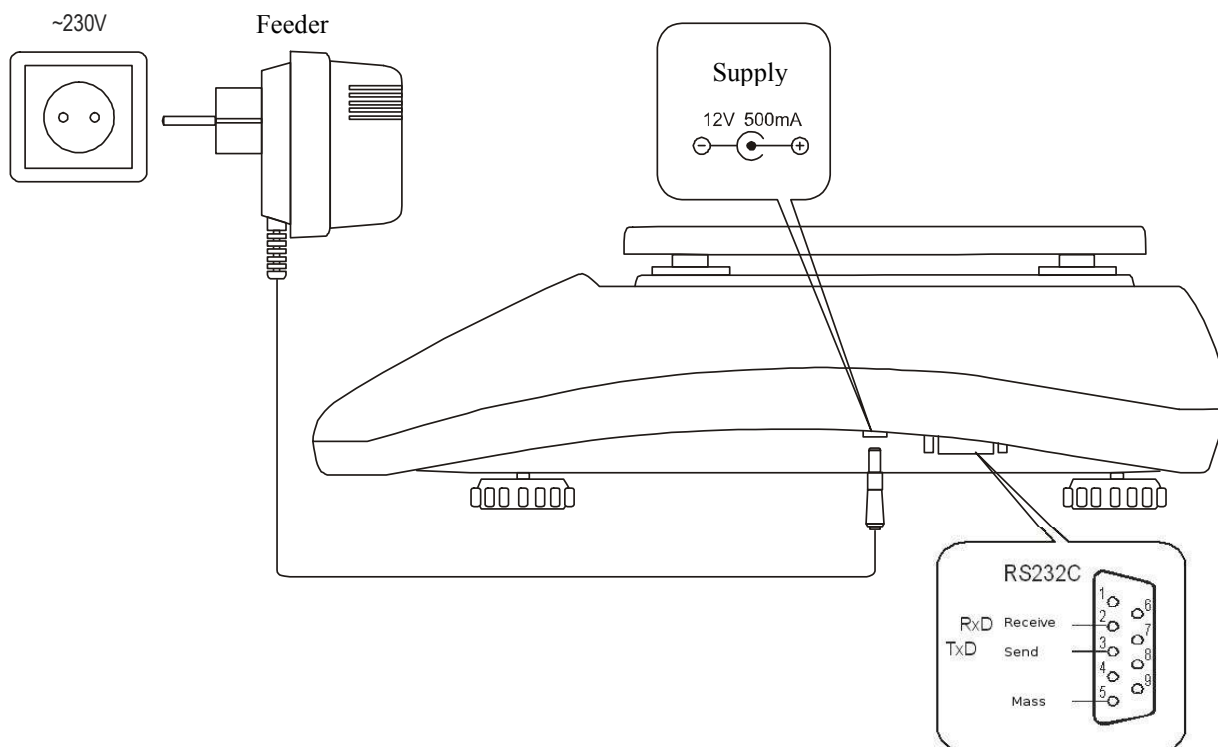
4. Technical data

Scale type	BLM1.5	BLM3	BLM6	BLM15	BLM30
Maximum loading (Max)	1.5kg	3kg	6kg	15kg	30kg
Reading unit (d)	0,1g	0,1g	0,2g	1g	1g
Minimal sample weight	0,1g	0,1g	0,2g	1g	1g
Pan dimension	250x180mm				
Working temperature	-10°C ÷ +40°C				
Weighting time	<3s				
Scale base dimension	255x310x107mm				
Scale weight	2,6kg				
Power supply	~230V 50Hz 6VA / =12V 1,2A				

5. General view of balance



Connections views:



6. Keys and indicators



Keys function description:

- T← - tare (subtract package weight from weighed mass) / approve options in menu,
- 0← - zero (option),
- I/⏻ - switch-on / switch-off (standby),
- ↻ - special key,
- LIB - database,
- ☐→ - print out,
- MENU - special function menu,
- UNITS - change of mass units on main display,
- DATA - change data on displays DATA
- HR - temporary increased indication resolution,
- ←B/G - gross weight indication switch,
- ↔LIB - get to record base,
- PCS+ - start counting procedure with added sample
(long hold key: turn-on/turn-off function, MIN/OK./MAX selection),
- PCS- - start counting procedure with subtractive sample
(long hold key: turn-on/turn-off function, MIN/OK./MAX selection),
- SPW - set a sample detail mass by numeric keys and ENTER,
- Σ+ - added current indication to summing register,
- Σ- - subtracted current indication from summing register

Main display indicators:

- indicator $\text{—} \text{—}$ - result stabilisation indicator,
- indicator $\rightarrow 0 \leftarrow$ - zero indicator,
- indicator *NET* - net weight indicator (indication with subtracted tare),
- indicator *kg/g* - change of unit displayed,
- indicators: - units of masses current indications,
lb, oz, ozt, ct

DATA display indicators:

- indicator *B/G* - gross mass (key B/G),
- indicator *T* - actual tare,
- indicator *PT* - stored tare,
- indicator *APW* - sample mass,
- indicator Σ - contents of summing register,

COUNT display indicators:

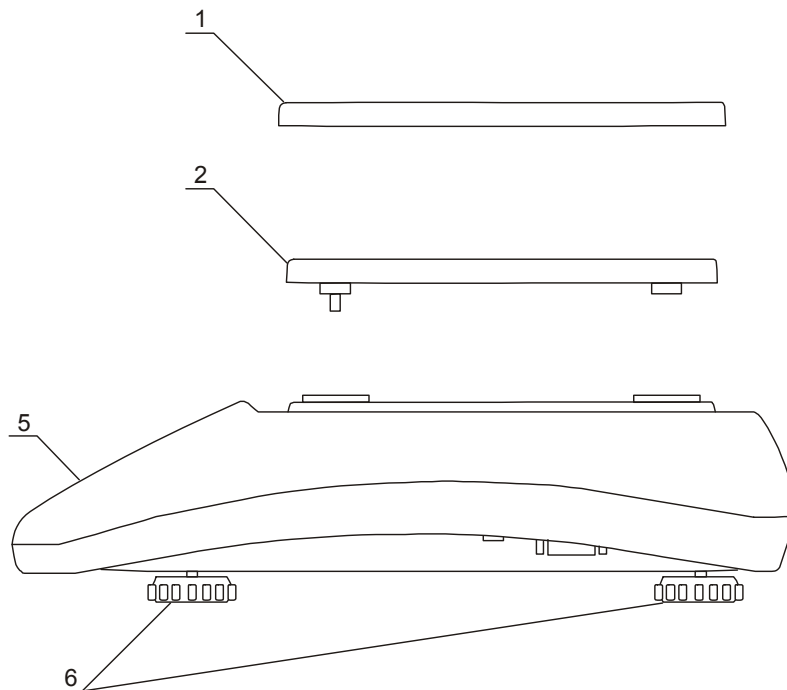
- indicator ∇ - not working,
- indicator *MIN* - indication under minimum threshold,
- indicator *OK* - indication between minimum and maximum thresholds,
- indicator *MAX* - indication above maximum threshold,
- indicator Σ - signalize indication of summing register contents.

7. Preparation of work place

Works place of scale should be chosen carefully. This place should be assured a proper temperature and essential area for attendance. Weight should stand on stable table.

Violent movements of air, dust, vibrations, violent changes of temperature or humidity above 90% are inadmissible. Scale should be disallow from strong electromagnetically or magnetically fields.

8. Preparation to work



1. Take the scale, pan and feeder out of the package. It is recommended to keep the original scale package in order to transport the balance safely in future.

2. Place the scale on a stable ground not affected by mechanical vibrations and airflows.

3. Put a carrying pan 2 in wholes.

4. Put the fish plate pan 1.

5. Level the scale with the rotating rear legs 6 so that the air bubble in the water-level 5 at the back of the scale is in the middle.



If scale has been moved from places with low temperature to places with upper temperature (for example in winter), please weight on time 4 hours purpose of acclimatization.

9. General rules

1. It is advised to check scale indication accuracy before and after series of measurement using any load with known weight. To check the scale with legal verification uses a calibration weight with valid calibration certificate. In case permissible error is exceeded it is advised to contact the nearest service to calibrate the scale.
2. Weighed sample should be placed in the centre of the pan.
3. The scale is equipped with a tare equal to its range. To tare the scale press →T← key (left or right). Storing a tare value does not extend measuring range, but only subtracts it from a load placed on a pan. To make weight control easier and to avoid range overdrawn, the scale is equipped with a load indicator (graduated in percentages).
4. Weighing result should be read when the indicator "└┘" lights, which signalizes stabilization of a result.
5. When the scale is not used but it is necessary to be ready to work immediately, it can be switched off by pressing I/⏻ key. The scale reading system is then switched off to "standby" mode. To switch the scale on press I/⏻ key. The scale is immediately ready to operate maximum accuracy (after self tests).
6. Before each measurement make sure that zero indicator is displayed. If zero indicator does not displayed or "----" communicate appears, press →0← key and wait until zero indication and zero indicator appears
7. The mechanism of scale is a precision devices and susceptible on congestions, impacts and mechanical shakes.



Do not overload the scale more then 20% of maximum load (Max).
Do not press a pan by hand.



Scale should be protected during the transport.

10. Start of work

Leave the pan empty, plug the feeder to the mains (~230V/50Hz) and plug the feeder connector to the 12V power socket at the bottom side of the scale.

Scale will execute following step:

- test of electronic components,
- display type of scale and version of program,
- zeroing the indication.

After displayed an indication on the main (left) display scale is ready to work.

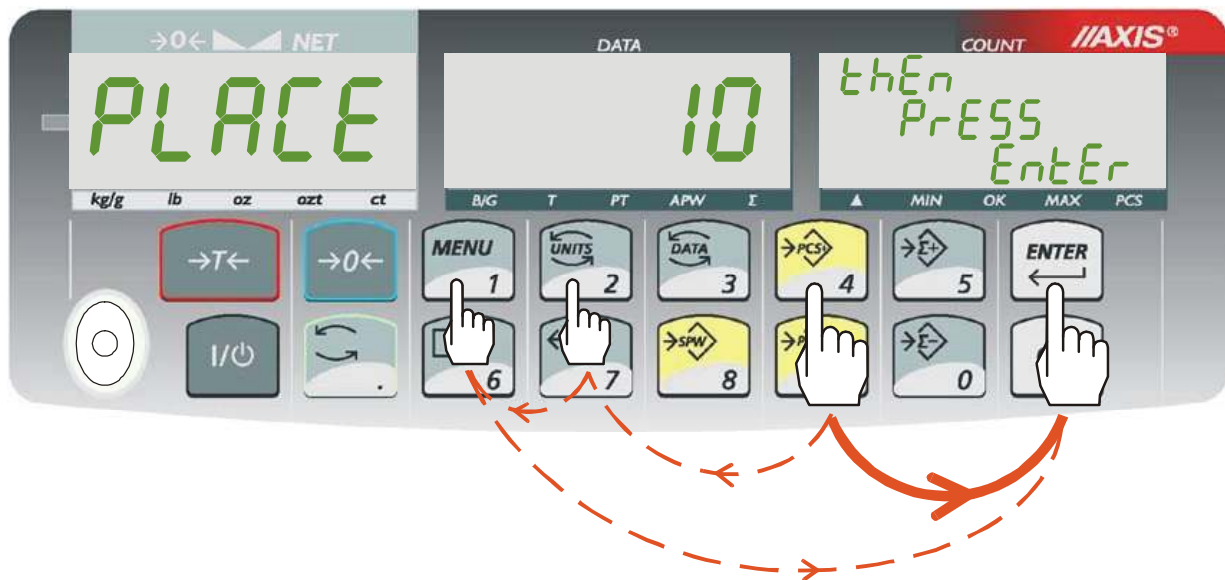
11. Pieces counting (PCS)

Scale enables to count identical pieces, e.g. turnbuckles or buttons

Measurement with single pieces putting on pan:

A measurement is performed in two phases:

- first phase - single piece weight calculation on the basis of defined pieces amount (default is 10 pieces.),
- second phase – pieces counting

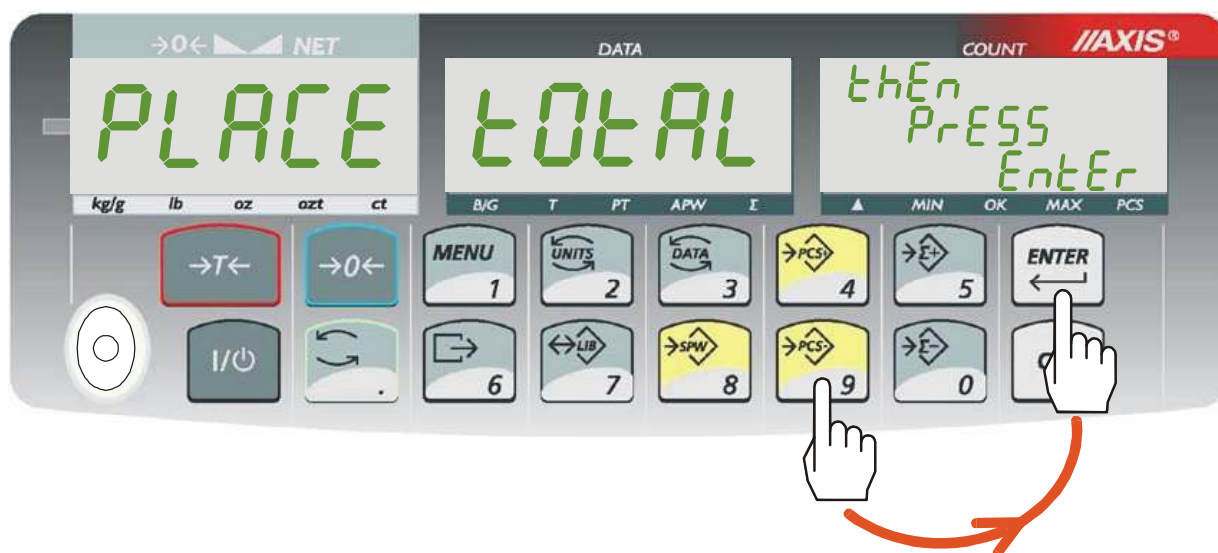


1. Put on pan quantified details sample.
2. Turn a counting by press **→PCS+** key.
3. If the quantified sample consists 10 pieces press **ENTER** (solid line on the drawing). If amount of detail is other write correct value by using numeric keys and **ENTER** (dotted line on the drawing).
4. Number of details has been showed on right display with **PCS** indicator. A sample mass has been showed in centered display with **APW** indicator.
5. Remove ample form pan and put o portion of pieces.
6. Result of calculation is read from right display.

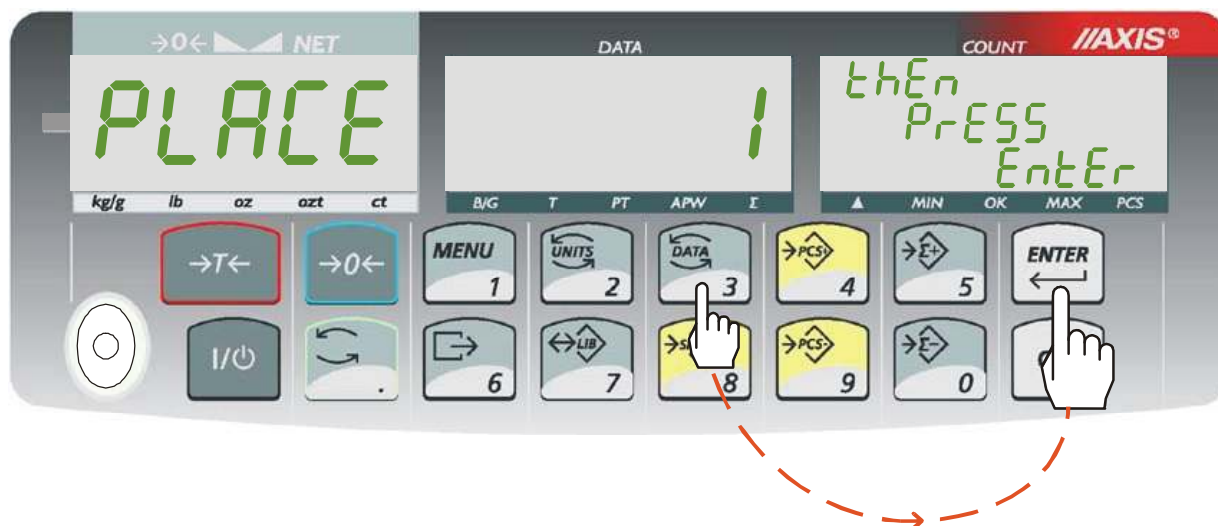
Measurement with single pieces removing from pan:

A measurement is performed in two phases:

- first phase - single piece weight calculation on the basis of removed pieces (default is 10 pieces),
- second phase – recalculating a weighting portion.



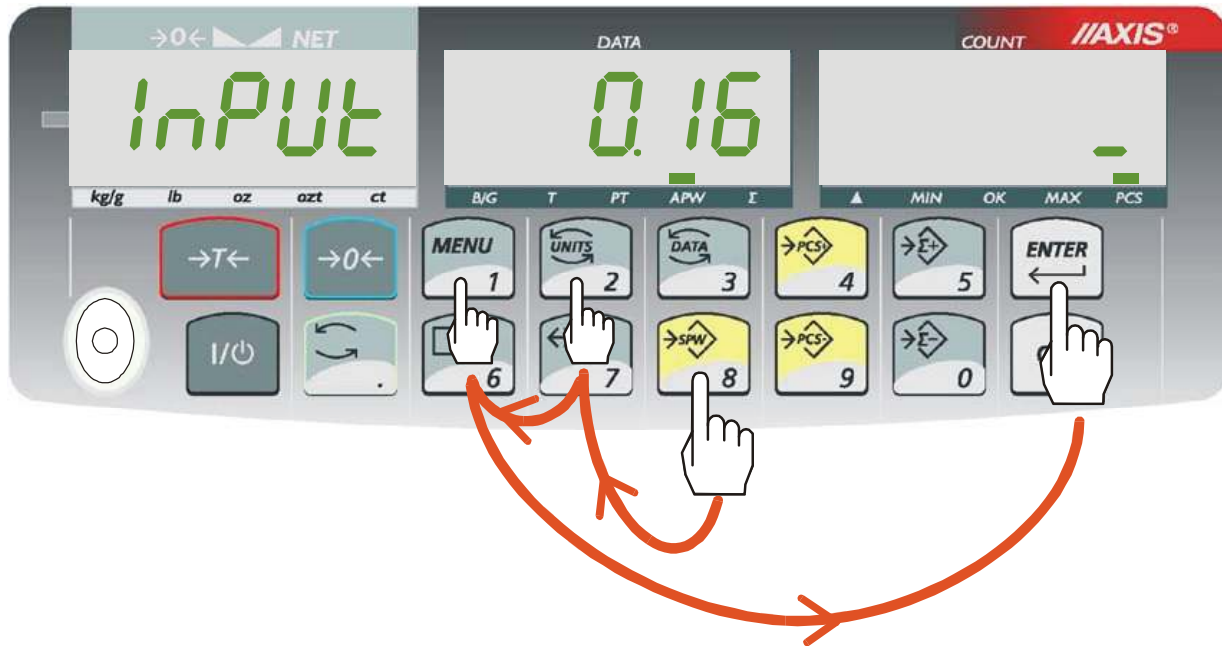
1. Put on pan a box with details.
2. Turn a pieces counting by press \rightarrow PCS-key and confirm by *ENTER* key.



3. Remove one or more details from the portion.
4. If one detail is removed press *ENTER* key. If amount of removed is other write correct value by using numeric keys and *ENTER*.
5. Number of details has been showed on right display with *PCS* indicator. A sample mass has been showed in centered display with *APW*.
6. Result of calculation is read from right display.

Change/write a sample mass by numeric keys:

During a pieces counting (indicator *PCS*) user can change actual sample mass. Write a sample mass when a counting process is turn-off initiate a counting process.



1. Press a **→SPW** key.
2. Write sample mass by using a numeric keys and **ENTER**.
3. Number of details has been showed on right display with *PCS* indicator. A sample mass has been showed in centered display with *APW*.
4. Result of calculation is read from right display.

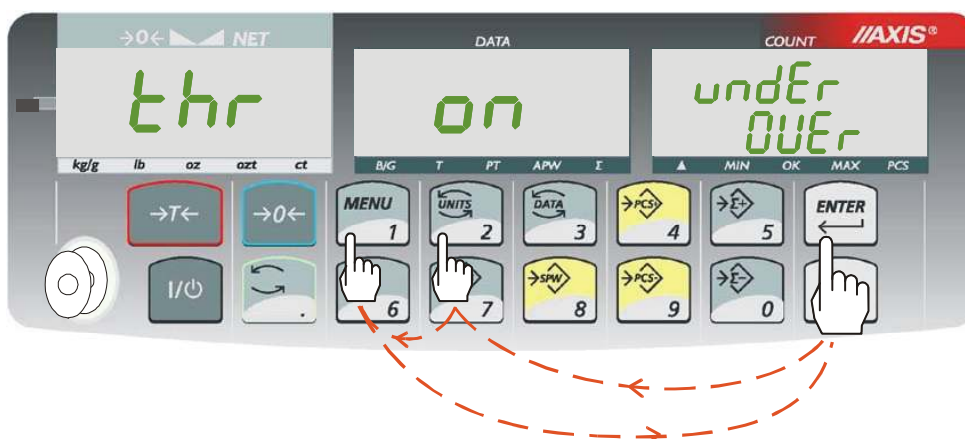
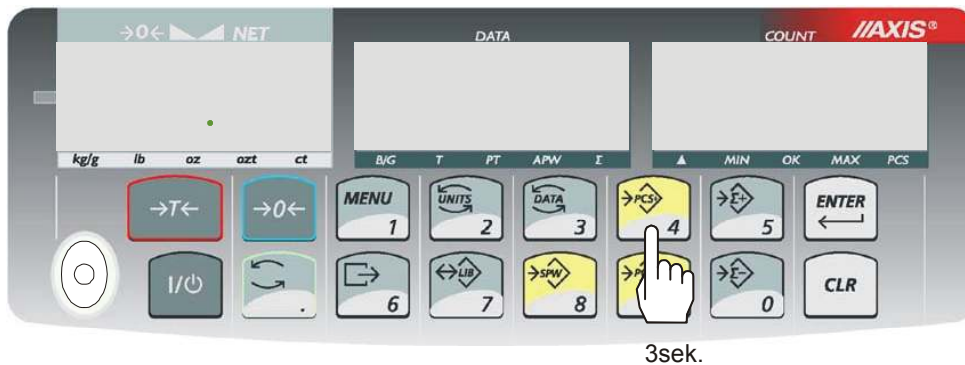
Note:

1. It is advised that single piece weight is not less than one reading unit and sample weight used in first phase is bigger than 100 reading units.
2. Err-PCS communicate signalizes that a sample was not put on the pan or single piece weight is less than one reading unit (it is possible to count pieces but measuring error is bigger).

MIN/OK./MAX selection, turn-on/turn-off counting detail

Hold a \rightarrow PCS+ (\rightarrow PCS-) key causes display following options:

- OFF – disable a counting details
- on – enable a counting details
- thr – setting a threshold selection MIN/OK./MAX



Set a value of threshold causes a turn-on an indicators *MIN*, *OK* i *MAX*, *state of* these indicators depends on value on indicator and thresholds.

If the result of details calculation is:

- lower than threshold *undEr* – scale signalizes *MIN*,
- between thresholds - scale signalizes *OK*, and during a pass a threshold scale turn-on buzzer,
- bigger than threshold *OVER* – and during a pass a threshold scale turn-on buzzer.

Note:

On the first start scale value of thresholds are set to maximum.

During a setting a upper threshold remember that his value can't be lower that value of minimum threshold.

12. Summation of measurements series (Σ .)

Scale is equip In summation register. That registers enable addition a next result of measurements.



1. Put element on the pan and press $\rightarrow\Sigma+$ button. Contents of this register have been showed temporary in centered display with indicator Σ .

Note: Using a $\rightarrow\Sigma-$ key causes a subtract indication from register.

2. Press several times a *DATA* key to belongs for continuous displaying of register – in this case an indicator is turn-on.

13. Data library (↔LIB key)

The scale is equipped with data library where user can save detail characteristics (number, single piece mass, default amount of samples and others) in chosen record number and later when it is needed recall to it.

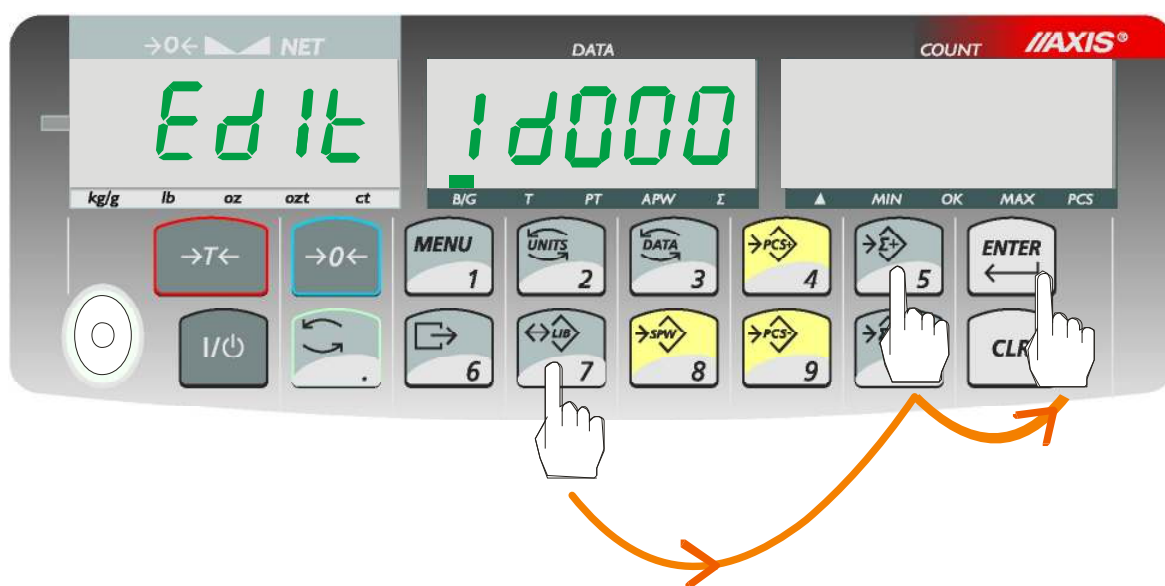
During scale work, scanner (configuration: prefix 04h, suffix CR+LF) readout of detail number causes searching through scale record library and in case of finding the right record recalling single piece mass and other data.

Record library edition

Longer pressing of ↔LIB key enters edition menu.

On left display a *Edit* sign shows up and on the middle one a record identification number (from 000 to 999).

Next using Σ+ and Σ- keys choose record number and press **Enter** to edit it.

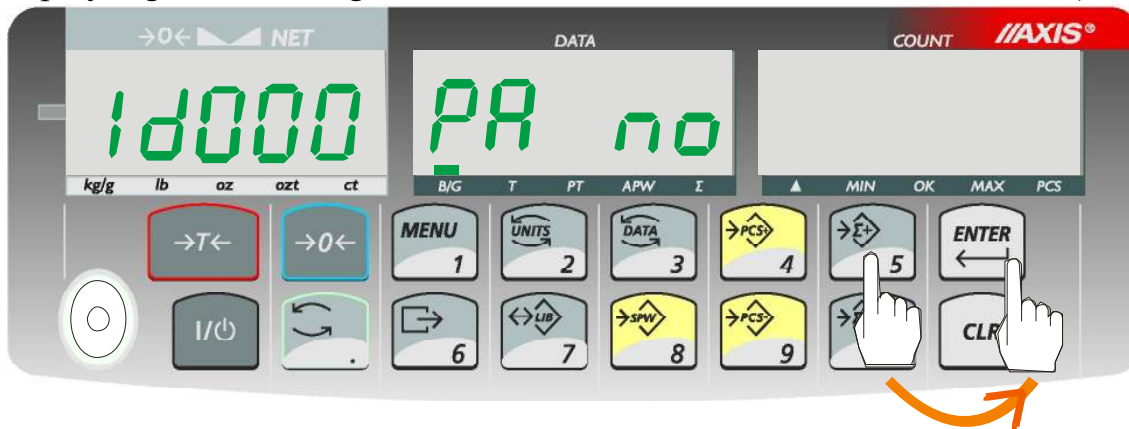


Chosen record id will show up on the left display. On the middle one following options will successively display:

- *PA no* – detail number inserting,
- *SPW* – single piece mass,
- *SPL* – default sample quantity,
- *PTARE* – inserting constant tare value for the detail,
- *undEr* – lower threshold value,
- *OVER* – upper threshold value,
- *SAVE* – saving settings,
- *ErASE* – erasing settings,
- out – exit the library (user can also use **CLR** key).

To speed up options displaying user can press Σ^+ and Σ^- button.

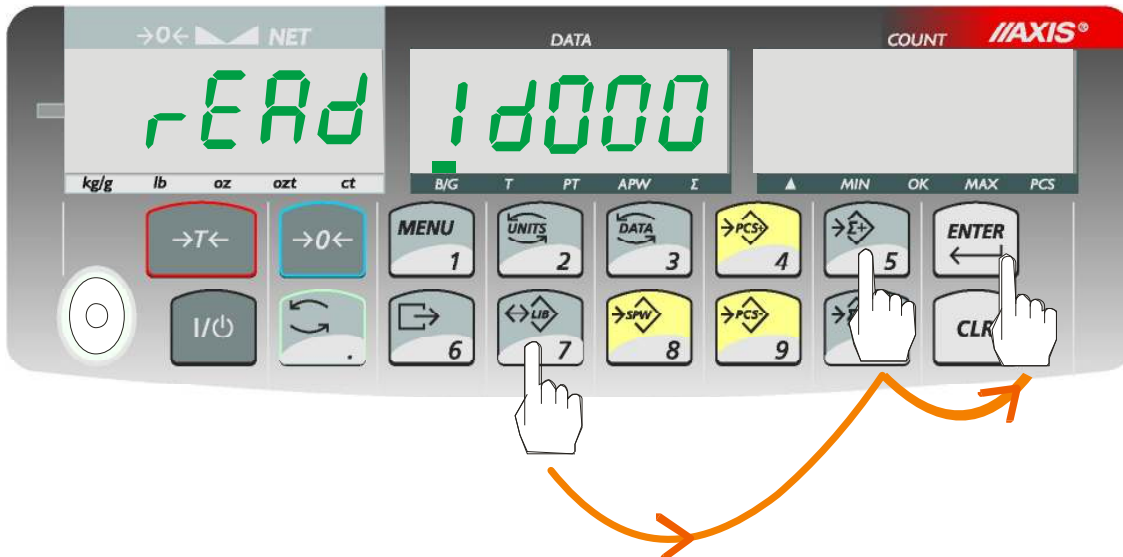
We choose option by pressing **ENTER** key (options that have inserted values display together with a green diode in lower left corner of middle screen).



After choosing the proper option user can insert numeral value using keyboard and confirm it with **ENTER** key.

Entering record library

Shortly press \leftrightarrow LIB key to enter record library in order to readout inscribed earlier record. User can differ saved records (green diode lights on middle screen) from empty ones.

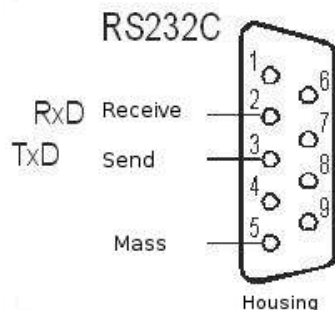



We choose record using Σ^+ and Σ^- keys and confirm our choice by pressing **ENTER**. It is also possible to inscribe directly the record number. In order to do that press \curvearrowright and then insert numeral value using keyboard. Confirm pressing **ENTER** key.

Selection of empty record is signalized by „EMPtY” message. Currently used record is marked by additional „in USE” message. If user wants to cancel choosing of records press **CLR** key.

14. Connecting a computer or a printer

The scale is equipped with RS232C which can be used to connect external devices such as a computer or a printer



When cooperating with a computer data is sent after initiate signal from a computer or after a press  button.

When cooperating with the scale, a computer should be equipped with a program which enables processing data from the scale

The Axis company offers programs to cooperating with scales. These programs are available on site www.axis.pl :

- *Test RS232C*- program to tests serial connections (full version),
- *ProCell* – program enabling cooperation with Microsoft Excel or different Windows applications (demo version).

Information for programmers (transmission protocol describe)

Signal description:

Computer→Scale: initialising signal S I C R L F (53h 49h 0Dh 0Ah),

Scale→Computer: weighing result according to the diagram below

(16Bytes, transmission parameters: 8bits, 1stop, no parity, 4800bps),

Byte description:

Byte 1 -sign „-” or space

" 2 - space

" 3÷4 - digit or space

" 5÷9 - digit, decimal dot or space

" 10 - digit

" 11 - space

" 12 - k, l, c, p or space

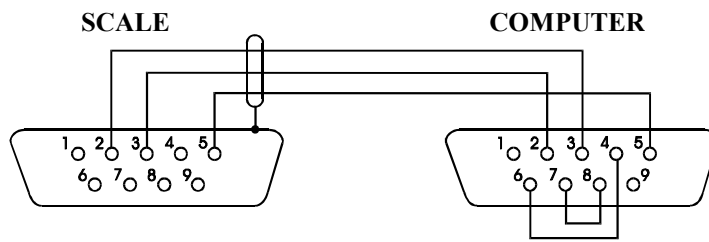
" 13 - g, b, t, c or %

" 14 - space

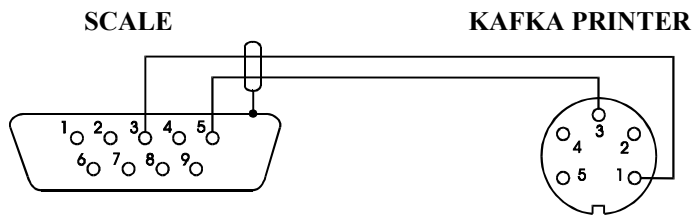
" 15 - CR

" 16 - LF

Connecting cable WK-1 (connect scale with computer / interface 9-pin):



Connecting cable WD-1 (connect scale with printer KAFKA):

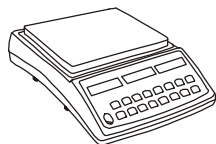


Settings of internal switch printer AXIS:

SW-1	SW-2	SW-3	SW-4	SW-5	SW-6	SW-7	SW-8
on	off	on	off	off	on	off	off

15. Basic function description

15.1 Normal weighing

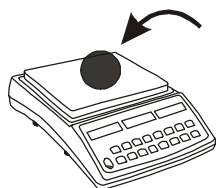


0.00 g

→T←



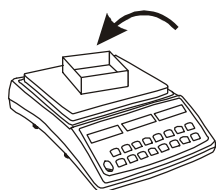
Press the →T← key when indication is different from zero at empty scale.



43.04 g

Weighing result should be read when the indicator "▲ ▼" lights.

15.2 Weighing with tare



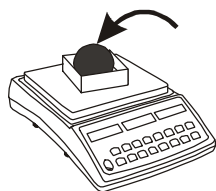
23.13 g

→T←



The scale is equipped with tare equal to its range.

0.00 g



63.24 g

Joint value tare and netto mass can not surpass the range of weight (*Max*).

16. Special function description

All scales, beside basic functions like weighing and tare, are equipped with the set of additional functions.

Basic set of user special functions consists of:

- autozero (*Autot*),
- calibration with external standard weight (*CALib*),
- serial port parameters setting (*rS232*),
- print out configuration (*PrInt*),
- date and time setting (*dAtE*),
- menu customization function (*ACtIV*),
- return to default settings (*dEFAU*).

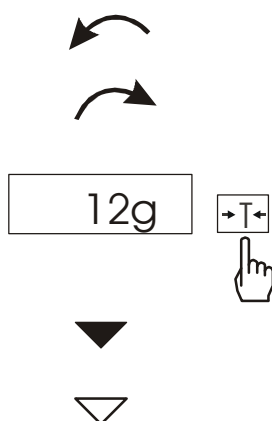
Other special functions can be enabled as an option on customer request (all functions are described in additional brochure when ordered).

Press *MENU* key to enter the function menu. Functions are displayed successively with consecutive numbers: *F1-Autot*, *F2-rS232*, etc.



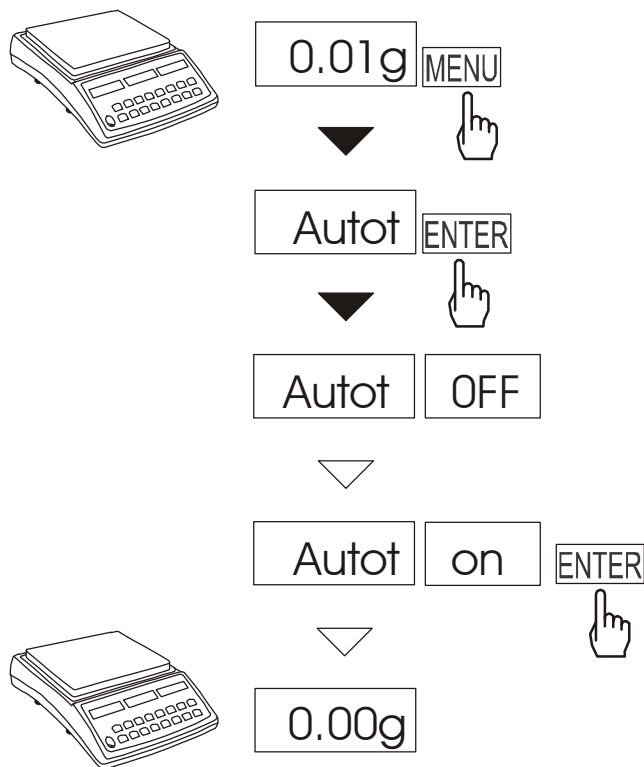
To customise the function menu with most frequently used functions use Menu Customisation function *ACtIV*.

To make clear how to manage with each function, in further part of instruction descriptions are replaced with pictures. Every time the picture of a hand appears, press the indicated key.



- put a load on the pan
- remove the load from the pan
- press the key when indication is displayed
- forced change
- automatic change

16.1 Autozeroing (Autot)



When *F..Aut* function is activated, the scale automatically ensures stable zero indication if the pan is empty or if zero indication was acquired by pressing $\rightarrow T \leftarrow$ key.

To activate the function press *MENU* key, then with *ENTER* key choose *Autot* and *Aut on*.

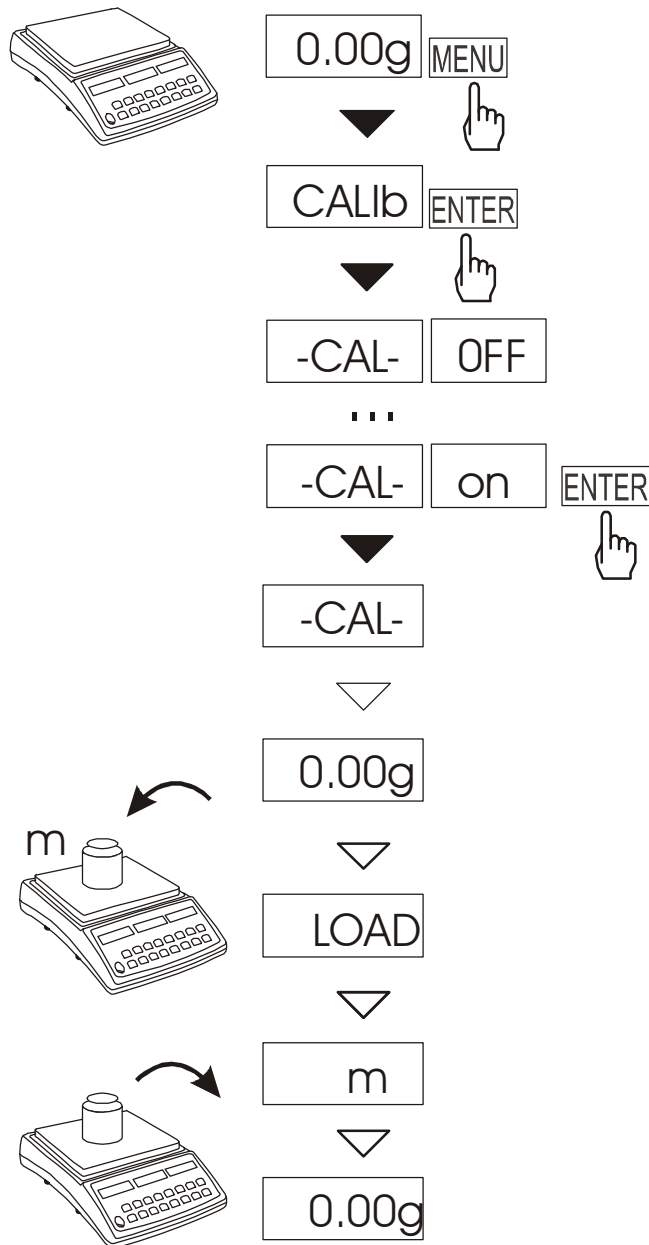
To leave the function press *MENU* key, then with *ENTER* key choose *Autot* and *AUt OFF*

Note: Autozeroing function is activated automatically for 10 min. after switching-on

16.2 Calibration with external weight (CALIb)

Calibration with external weight standard in verified balances should be performed in case balance indications exceed permissible error. To calibrate the balance a service centre should use calibration weight as stated in Technical Data table (or of better accuracy).

Operations sequence:



Cause a user function by press *MENU* key.

Press *ENTER* key during the *CALIb* is displayed.

They will be displayed following options:

-*CAL OFF* – out without calibration,

-*CAL on* – calibration with external weight,

out –leave option

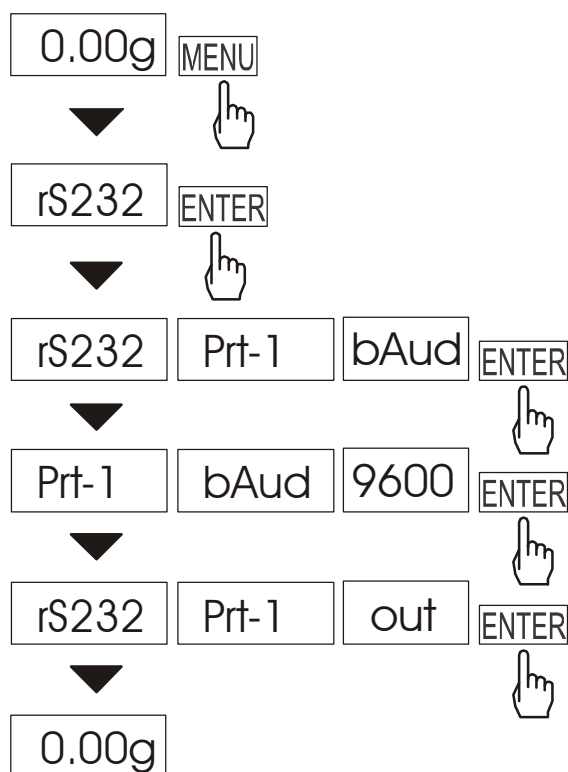
Press *ENTER* key during the *CAL on* is displayed.

Wait until zeroing is finished.

When *LOAD* communicate put a calibration weight on the pan.

Wait until calibration process is finished and zero indicated.

16.3 Serial port parameters setting (rS232)



The function enables to set the following transmission parameters (standard parameters underlined):

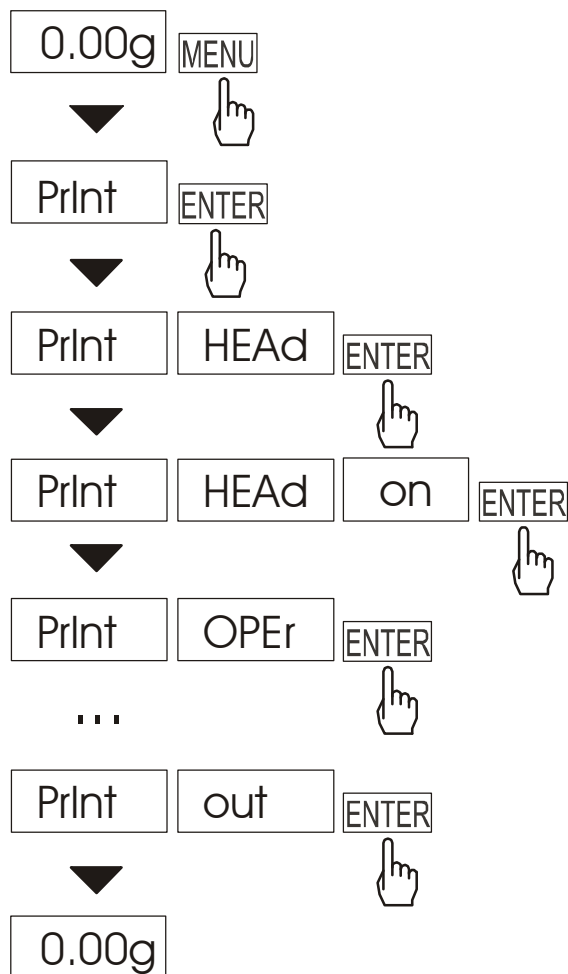
- *bAud* (4800, 9600, ..., 115200) – transmission speed,
- *bitS* (7, 8) – the number bits in a byte,
- *PArIt* (0, 1) – parity control,
- *Odd* (0, 1) – type of parity,
- *Send* – continuous transmission without using key.

To set desired transmission parameters activate *rS-232* function, choose appropriate parameter and press *ENTER* key to accept needed parameter value.

The example at the left presents how to set transmission speed value to 9600bps.

To leave the function chooses *out* option.

16.4 Print-out configuration function (PrInt)



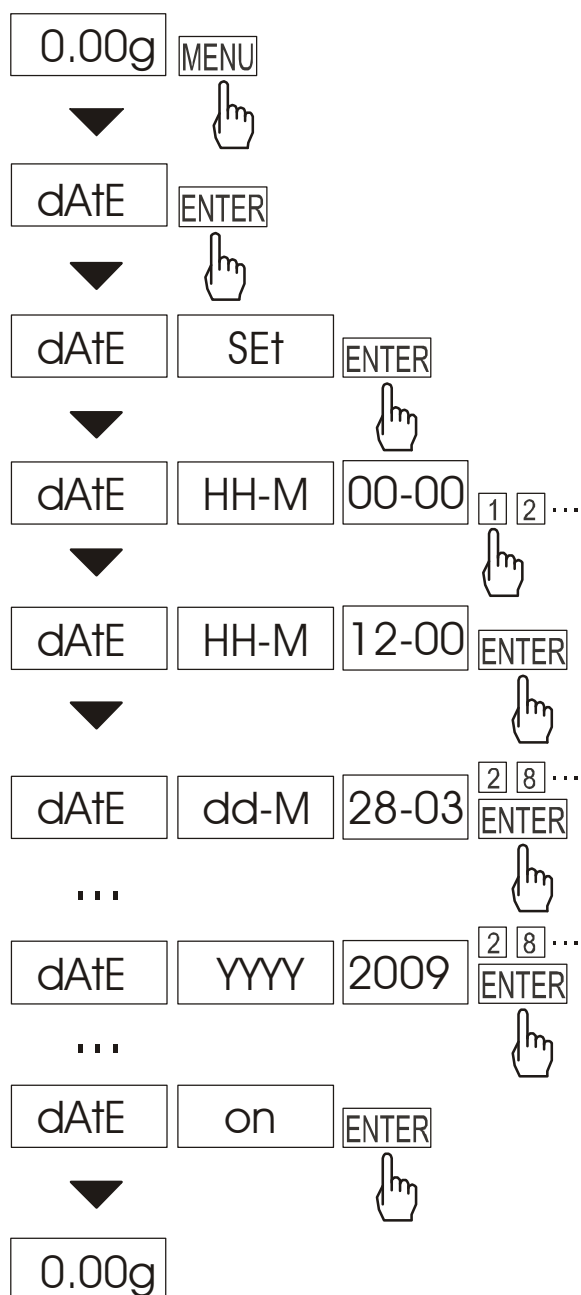
This function allows choosing following fields on the print-out:

- HEAd* – header: name, model and number of scale,
- *OPEr* – operator code (max 6 digits),
- *dAtE* –date,
- *tIME* – time,
- *Pr no*– number of print-out (choose his function is clearing a counter),
- *PA no* – product number (13 digits),
- *Count* –counting result,
- *totAL* – ammount of results,
- *APW* – netto mass,
- *tArE* – actuall tare value,
- *GrOSS* – gross mass.

If the function *OPEr* is checked, operator code can be inscribe directly by press ↶ key.

The example at the left presents how to set header and operator code, setting of other function is similar.

16.5 Date and time setting function (*dAtE*) - option



This function allows setting actual date, time and setting a PIN code to protect by non authorized changes.

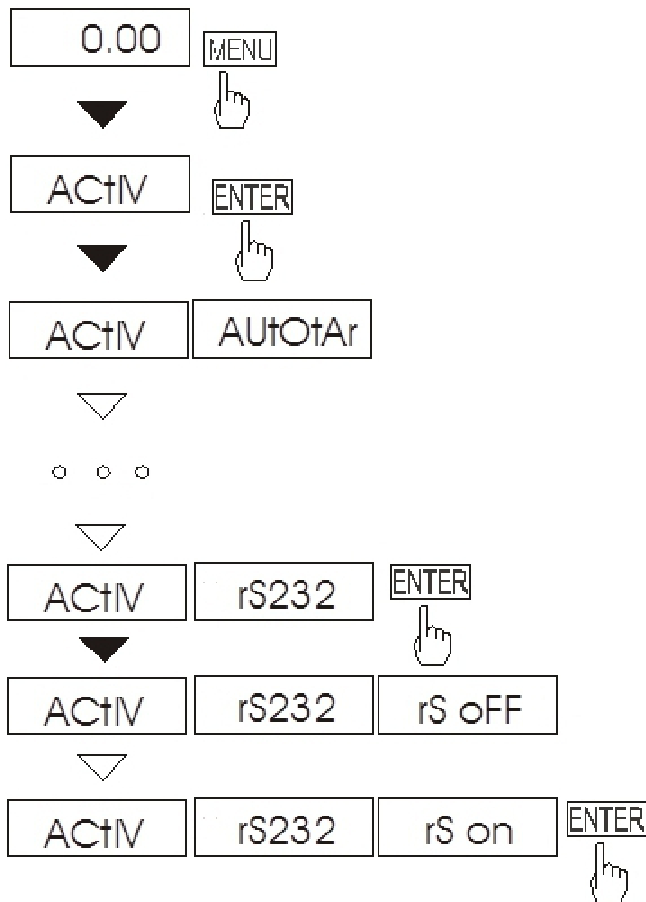
This function is installed on the special order.

Press *ENTER* key during the *dAtE* is displayed.

They will be displayed following options:

- *OFF* – turn-off date on the print-out,
- *on* – turn-on date on the print-out,
- *SEt* – setting time and date,
- *PIn* – access code (4 digits),
- *out* – leave the function.

16.7 Customization function menu (*ACTIV i dEFAULT*)



This function enables to select special functions that will be displayed after pressing *MENU* key. Easy access to the most useful functions will shorten operation time and make work more comfortable.

User can return to factory setting using special function *dEFAULT*.


Operation sequence shown on the picture, presents how to add RS232C parameters setting function to the Function Menu.

To remove a function from the Function Menu choose *rS oFF* in the last operation.

17. Maintenance and repairs of small defects

1. The scale should be kept clean.
2. Take care that no dirt gets between the platform and the scale base. If found any, remove the pan (lift it up), remove dirt and then replace the pan.
3. In case of improper operation caused by short-lasting power supply decay, unplug the scale from the mains and then plug it again after few seconds.
4. It is forbidden to make any repairs by unauthorised persons.
5. To repair the scale, please contact our nearest service. List of authorized services is show on site: www.axis.pl.
6. Damages scales should be sent to repair only in original package. Scale should be protected against pressure.

Error communicates:

Communicate	Possible cause	Remedy
<i>C-1 ... 6</i> (over 1 min.)	self test failed	if displayed more than 1 minute, contact an authorised service
balance doesn't work	protection rod	remove protection rod and cap
<i>L</i>	pan missing	put the pan on
	mechanical damage	contact an authorized service
<i>H</i>	overloading	remove the load from the pan
	mechanical damage	contact an authorized service
<i>Err-b</i>	the scale was switched on with loaded pan	remove the load from the pan
 indicator does not appear	unstable ground vibrations air flows	place the balance on a stable ground not affected by mechanical vibrations and airflows
	balance damage	contact an authorized service
- - - - -	taring is progress	contact an authorized service

Declaration of Conformity

We:

AXIS Spółka z o.o. 80-125 Gdańsk, ul.Kartuska 375B

confirm with all responsibility that scales:

BLM1.5, BLM3, BLM6, BLM15, BLM30

marked with CE mark comply with the following:

1. EN 55022:2000 standard Limits and methods of measurement of radio disturbance characteristics of information technology equipment and IEC 61000-4-3 Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test, harmonised with the Council Directive 89/336/EEC).

Additional information:

- Conformity evaluation for the Council Directive 73/23/EEC and 89/336/EEC were carried out by Laboratorium Badawcze Oddziału Instytutu Elektrotechniki in Gdańsk, accredited by PCA,

Gdańsk, 23.03.2009 r.

Per pro Director of AXIS Sp. z o.o.:

Production Manager

Jan Kończak



Podpis

Notes